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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/563,233

06/09/2006

Thomas McQuiggin Lowes

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24240 7590 04/15/2010

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EXAMINER

WILSON, GREGORY A

ART UNIT

PAPER NUMBER

3749

MAIL DATE

DELIVERY MODE

04/15/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/563,233	Applicant(s) LOWES, THOMAS MCQUIGGIN	
	Examiner Gregory A. Wilson	Art Unit 3749	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,9-16,21-38,42-47 and 51-61 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,9-16,21-38,42-47 and 51-61 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-43 and 57-61 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "sufficiently high momentum" in claims 1, 23 and 37 is a relative term which renders the claim indefinite. The term "sufficiently" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The specification does not provide a value or range such that a person having ordinary skill in the art could reference to determine what would be suitable considerations for "a sufficiently high momentum" to produce the desired jet.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-4, 9-16, 21, 22, 27-38, 42-45, 47 and 51-61 are rejected under 35 U.S.C. 102(e) as being anticipated by **Hansen et al (6,672,865)**. **Hansen et al** a kiln system (10) for mixing process gas flow that flows through housing (12) of an exhaust gas bypass system (SEE Figures 1-4) including a precalciner and riser duct, wherein the kiln system is for preparing cement clinker (SEE Summary of Invention) and has a gas temperature between 850-1400 degrees Celsius (SEE column 13, lines 27-38) and includes a plurality of injectors (32) arranged at angles of between 0 to 60 degrees at predetermined intervals around the cross section of the interior of the housing (SEE Figure 6) and are connected to a gas supply system (34) which includes a fan, blower or compressor which is operable to feed pressurized air (or preheated) of high energy/velocity (a jet), to the injectors to produce rotational momentum in the kiln gas stream to dissipate stratification (column 9, lines 23-35) such that kiln gas is entrained in

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the injected gas along the axis of the housing, a combination of the position of the injectors within the kiln system and the nozzles (36) (SEE Figures 8a & 8b shows end portions with slots functioning as vanes (ie swirling means) or bluff bodies since they consist of a flattened front) aid in imparting the rotational momentum (swirling) (Figure 7 illustrates the inherent gas flow out of the nozzles as affected by the flattened fronts shown in Figures 8a & 8b **as it enters the housing of the kiln system**) and as can be seen in the Figures 8a & 8b have angles which anticipate the applicants claim 4 and the injectors are capable of impinging tangentially on an imaginary circle which forms towards the center of the housing as suggested by the flow shown in Figure 6 of high pressure air exiting the nozzles (36). Based off the illustration of Figure 6, a person having ordinary skill in the art would recognize and conclude that at least 10 percent of the cross sectional area of the housing is covered by the circle of air flow, additionally the claims directed to the velocity of the injection gas as measured in Reynolds Number or the frequency of turbulence or the calculation in which these values are determined are not novel limitations which cannot be performed by the structure of Hansen et al.

Claims 1-9, 27-30, 33-35, 37-41, 44, 45, 47-50, 57, 58, 60 and 61 rejected under 35 U.S.C. 102(b) as being anticipated by **Quittkat (4,248,639)**. **Quittkat** discloses a system for mixing a process gas flow (unnumbered, "hot gas") which flows through the housing (27) of a kiln system (SEE Figure 1) and includes at least one injector (18) (SEE Figure 2) provided to the housing which injects preheated air, a gas supply system (18, 21) connected to the injector for supplying injection gas to the

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injector at a pressure (inherent), the injector injects gas into the housing at such a momentum to produce a jet having turbulent flow characteristics such that process gas flow ("hot gas") is entrained by the injected gas (as illustrated in Figure 2), the injector is accompanied by swirling means (32, 33) which provide an axial swirl which affect the injected gas as it enters the housing of the kiln system (SEE Figure 2); in re claim 2 the injector is arranged such that "hot gas" is flowing through a housing along an axis of the housing (Figure 2), in re claim 3, the swirl means are swirl vanes which meet the applicants limitation of having an angle of approximately 10-35 degrees (ie: claim 4), in re claim 9, Figure 2 shows hot gas which is caused to swirl by vanes (32, 33) and entrained with fuel (34) before the injected gas flow impinges upon an interior of the housing which is a precalciner or gas riser duct (in re claims 33 and 34).

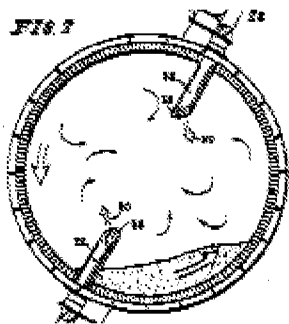
Response to Arguments

With regards to the applicants argument of the use of the term "sufficiently" as used in the claim, namely that the momentum is sufficiently high to produce a jets having appropriate turbulent flow characteristics such that the process gas flow is entrained by said injected flow, the examiner agrees with the applicants argument and recognizes that the term was indeed supported in paragraph [0049] of the applicants specification which defines which defines the total momentum of the injection gas during injection is approximately 50 to 150% of the momentum of the process gas flow. The

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35 U.S.C. 112 rejection to claims 1-4, 9-16, 21-38, 42, 43, and 57-61 are hereby withdrawn.

Applicant's arguments filed 10/28/09 with regard to the prior art reference of Hansen et al (6,672,865) have been fully considered but they are not persuasive. The applicant argues that in independent claims 1, 23, 37 and 44, the claims define that the injected gas is caused to swirl about its axis of injection as it enters the housing of the kiln system, citing paragraphs [0109]-[0111]. The applicant argues that Hansen fails to disclose the swirl means of the axial swirling feature set forth in the four independent claims stated above and that the examiner's finding on this feature is not understandable, further stating Hansen discloses no axial swirl in the injected gas and discloses no means capable of imparting an axial swirl; The examiner respectfully disagrees and directs the applicants attention to Figure 7 which shows the high energy



injected air (50) injected to impart rotational momentum to the kiln gas stream (SEE column 9, lines 30-35), a person having ordinary skill in the art would recognize that the rectangular cross-section of the orifices shown in Figures 8a & 8b having an aspect ratio greater than one, would impart an even greater rotational momentum to the kiln gas stream some of which will inherently be in the axial direction as evidenced by the unnumbered flow arrows in Figure 7. The examiner

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maintains the position that as the flow enters the kiln system via the air injection tubes (32), the flow is caused to impart a swirl as it is forced through the openings as shown in Figures 8a & 8b (SEE that Figures 8a & 8b show different angles which will affect the direction of flow which will be more dramatic than the flow shown as element 50 in Figure 7, which even in this Figure there is shown some resultant axial flow that can be produced when the injected air interacts the process gas in the kiln) and thus the claims as interpreted by the examiner do not distinguish over the prior art reference of Hansen et al. With regards to the applicants argument that the flow through the orifices (38) of Hansen et al as indicated by the flow arrows, show the direction of the air in the overall process gas flow *after the injected gas has left the nozzle 36, and do not show axial swirl imparted to gas traveling through the injectors as it enters the housing*, the examiner respectfully disagrees and again directs applicants attention to Figures 8a & 8b which have ends on the orifices (38) which affect the flow of injected air as it is entering the housing, ie: the injected air is not inside the kiln housing until **after** it has passed through the orifice ends shown in Figures 8a & 8b.

Applicant's arguments, with respect to the 35 U.S.C. 102(b) rejection of Quittkat have been fully considered and are persuasive. The rejection of claims 1-4, 9, 27-30, 44, 45, 47, 57, 58, 60 and 61 have been withdrawn. Quittkat includes a swirling means (32, 33), however this swirling means is not provided in the injectors but are installed in the main wall of the furnace housing and thus affects the flow of gas already present in the housing.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory A. Wilson whose telephone number is (571)272-4882. The examiner can normally be reached on 7 am - 4:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve McAllister can be reached on (571) 272-6785. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Gregory A. Wilson/
Primary Examiner, Art Unit 3749
April 12, 2010